

CLAIMS

We claim:

1. A device for measuring the flow rate of a fluid in a wellbore, comprising:
a variable orifice valve; and
5 a differential pressure measurement mechanism for measuring the pressure loss of
the fluid across the variable orifice valve.
2. The device of claim 1, wherein the variable orifice valve comprises a sleeve
valve.
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3. The device of claim 2, wherein the variable orifice valve is mounted on a side
pocket mandrel.
4. The device of claim 1, wherein the variable orifice valve is mounted on a side
15 pocket mandrel.
5. The device of claim 1, wherein the differential pressure measurement mechanism
comprises:
an outer pressure measurement device for measuring the pressure upstream of the
20 variable orifice valve; and
an inner pressure measurement device for measuring the pressure downstream of
the variable orifice valve.

6. The device of claim 1, wherein the differential pressure measurement mechanism comprises a differential pressure measurement device for measuring both the pressure downstream and upstream of the variable orifice valve.

5 7. The device of claim 1, wherein:
the variable orifice valve is adapted to allow flow of the fluid from an annulus of the wellbore to the interior of a tubing string disposed in the wellbore; and
the differential pressure measurement mechanism measures the pressure of the fluid in the annulus and in the tubing string interior.

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8. The device of claim 1, wherein the fluid is a single phase liquid.

9. The device of claim 1, wherein the fluid is a single phase gas.

15 10. The device of claim 1, wherein the fluid includes a water and an oil content.

11. The device of claim 1, wherein the fluid is a two phase liquid and gas flow.

12. The device of claim 1, wherein the fluid is a multi phase flow.

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